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Nuclear spin-lattice relaxation in finely dispersed carbonizate powders

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Abstract

Finely dispersed carbonizate powders were studied with the aim of revealing their suitability for producing hyperpolarized noble gases. In the temperature and frequency dependences obtained over a wide range of temperatures and magnetic fields for the spin-lattice relaxation times of the magnetic moments of 3He, 1H, and 13C nuclei, anomalous features caused by the suppression of the exchange between surface paramagnetic centers in a magnetic field were observed. It is shown that the interaction with magnetic moments of the 1H nuclei situated near the paramagnetic centers is the main polarization-leakage channel for the noble-gas nuclear spins. © 2004 MAIK "Nauka/Interperiodica".

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